

## Is Life Better With Electricity?

### DESIGN TECHNOLOGY



#### Progression in Skill:

Gather information about the needs and wants of the game user and use this information to develop design criteria e.g. use lights and/or sound to score/lose points. Generate realistic ideas through discussion, annotated sketches, cross-sectional and exploded diagrams. Know which order to complete the different stages of the game making process.

Select and use tools and equipment to cut, shape, join and finish with some accuracy.

Select and use materials and components, including construction materials (e.g. card, wood) and electrical components according to their functional properties (e.g. electrical conductors and insulators) and aesthetic qualities.

Explore games that rely on electrical circuits to score/lose points:

- How does the game work?
- What are the key features and components?
- How does the switch work?
- What different sort of switches are there?

Understand how to identify possible faults in an electrical circuit, e.g. check connections, screw bulbs in tightly, test components in a 'working' circuit.

Play the game to test the electrical circuit and assess it against the design criteria, considering the wants and needs of the user.

Identify what has worked well and what could be improved upon.

#### Long-term Memory Knowledge:

Develop design criteria based on what makes a good game.

Explore ideas through diagrams and discussion.

Order the different stages of the making process.

Choose appropriate tools and equipment for the task.

Choose materials that are suitable for the purpose and have an aesthetic appeal.

Explain how different electrical games work.

Identify and correct basic faults in an electrical circuit.

Through playing the game, assess its success against the design criteria.

Identify what has worked well in the project and what could be improved.

#### Key Vocabulary (key vocabulary from this term's Science learning will also be used)

<b>prototype</b>	a model made to test whether a design will work
<b>design criteria</b>	a set of goals, decided upon at the start of a project, that help us decide how successful we were
<b>exploded diagram</b>	a drawing to show how the separate parts of a product fit together
<b>system</b>	a set of related parts that, together, achieve a desired outcome
<b>input device</b>	components used to control an electrical device e.g. switches
<b>output device</b>	components that produce an outcome e.g. bulbs and buzzers

#### Progression in Resources:

Toys and games that rely on electrical circuits to work; switches, aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials and media; buzzers, bulbs, bulb holders, batteries, battery holders; wire, wire strippers; right/left handed scissors, PVA glue, cutting mats

#### Relevance

<b>Now</b>	Children can combine their knowledge of electrical circuits and designing and making skills to make a product they are proud of and enjoy playing.
<b>Future</b>	Understand how electrical systems are used in products and be able to carry out some basic repairs.
<b>Aspiration</b>	Pursue careers in electrical engineering and game designing or develop these for pleasure.

#### National Curriculum Links:

When designing and making, pupils should be taught to: **Design:** use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups; generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams. **Make:** select from and use a wider range of tools and equipment to perform practical tasks accurately; select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. **Evaluate:** investigate and analyse a range of existing products; evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical knowledge:** understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

#### Essential Prior Learning:

Construct a simple series electrical circuit in science, using bulbs, switches and buzzers; cut and join a variety of construction materials, such as wood, card and plastic; be able to explain why some tools and materials are better than others for the required purpose.